MAKHOTIN, V., tekhhik-tekhnolog

Salting of herbs. Obshchestv. pit. no. 7:18 Jl '58. (MIRA 11:7)
(Herbs--Preservation)

MAKHOTIN, V.

Take excellent care of apparatus. Sov.sviaz. 2 no.12:14 D '52.
(MLRA 7:8)

1. Tekhnik Barnaul'skogo telegrafa.
(Telegraph--Apparatus and supplies)

METEL'SKIY, Georgiy Borisovich. Prinimal uchastiye MAKHOTIN, K.K.; RYAZANTSEVA, M.M., red.; MARKOCH, K.G., tekhn. red.

[Crossbar automatic telephone exchanges] Koordinatnye ATS. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1961. 189 p. (MIRA 14:10)

(Telephone, Automatic)

MAKHOTKIN, G., inzh.

Amphibious motor sledges. Grazhd. av. 20 no.6:15 Je '63.
(MIRA 16:8)

(Motor sledges)

MAKHOTKIN, G., inzh.

Amphibious aerosledges. Grazhd. av. 20 no.3:28-29 Mr '63.
(MIRA 16:4)

(Vehicles, Amphibious)

MAKHOTIN, F.S., inzh.

We use modern equipment and we increase labor productivity. Der. prom. 10 no.9:21-23 S '61. (MIRA 14:10)

1. Leningradskaya mebel'naya fabrika imeni Kharturina.
(Leningrad--Furniture industry)

MAKHOTIN, B. A., Cand Geog Sci -- (diss) "Geography of animal husbandry in the Yaroslavskaya oblast'. (Economico-geographical features)." Moscow, 1960. 19 pp; (Moscow State Pedagogical Inst im V. I. Lenin); 250 copies; price not given; (KL, 52-60, 118)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500002-6

MAKHOTIN, Aleksey Nikolayevich; ANDREYEV, P., red.; DONSKAYA, G.D., tekhn. red.

[Operation of GAZ-51A motortrucks] Ekspluatatsiia avtomobilia GAZ-51A. Moskva, Nauchno-tekhn. izd-vo M-va avtomobil'nogo transp. i shosseinykh dorog RSFSR, 1961. 64 p. (MIRA 14:7)
(Motortrucks)

MAKHOTIN, A.A.

Ivan Ivanovich Shmal'gauzen, 1884-1963; obituary. Zool. zhur. 43 no.2:297-302 '64. (MIRA 17:6)

MAKHOTIN, A.A.; PRAVDIN, F.N.

In memory of Ernest Georgievich Bekker (1874-1962). Ent. oboz. 42 no.1:226-233 '63. (MIRA 16:8)
(Bekker, Ernest Georgievich, 1874-1962)

MAKHOTIN, A.A.; DAVYDOVA, E.D.

Morphological and functional importance of the elements of mouth apparatus in the caterpillars of some moths. Zool. zhur. 40 no.12:1842-1857 D '61. (MIRA 15:3)

1. Laboratory of Invertebrate Zoology, Institute of Animal Morphology, Academy of Sciences of the U.S.S.R., Moscow.
(Caterpillars)

MAKHOTIN, A.A. [Makhotin, A.A.]

On the principles of elaborating phylogenic schemes. Analele biol. 14 no.2:94-110 Ap-Je '60. (EEAI 9:11)
(PHYLOGENY)

Abs Jour : Ref Zhur - Biol., No 7, 1958, 28619

complexity at that stage when the first performs the most complex "biological problems", and the second when it functions. The functional significance of the organ at one of the developmental stages justifies the existence of its rudiments at the preceding stages and its reducing residues in the subsequent stages. The duration of each ontogenetic stage is determined by its biological significance to the species, its life stability, and it becomes a subject of natural selection in itself.

MAKHOTIN, A. A.

USSR/General Biology - Evolution. B-7

Abs Jour : Ref Zhur - Biol., No 7, 1958, 28619

Author : Makhotin, A.A.
Inst : -
Title : Specialization of Ontogenetic Stages in Insects and the Phylogenetic Manner of Its Accomplishment.

Orig Pub : V. sb.: Probl. sovrem. embriologii. L., Un-t, 1956, 190-199

Abstract : Based on an example of insects, the author develops general considerations regarding individual development of animals. The whole process of ontogenesis may be divided into a number of stages characterized by different "biological problems". The variation of "biological problems" may cause an adaptive evolution of separate stages in different directions, but ontogenesis on the whole remains a single continuous process. The organism or an individual organ attains greatest morphological

Card 1/2

MAKHOTIN, A.A.

Principles underlying the construction of phylogenetic schemes. Trudy Inst.morf.zhiv. no.27:52-67 '59. (MIRA 13:2)

1. Laboratoriya bespozvonochnykh zhivotnykh Instituta morfologii zhivotnykh im. A.N.Severtseva AN SSSR.
(Phylogeny)

MAKHOTIN, A.A.

Microsurgical scissors for morphological and experimental work with insects. Zool.zhur. 34 no.3:658-659 My-Je '55.
(MLRA 8:8)

1. Institut morfologii zhivotnykh im. A.N.Severtsova AN SSSR
(Dissection)

MAKHOTIN, A.A.

Viktor Rakhmil'evich Veitsman. Trudy Inst.morf.zhiv. no.8:170-172 '53.
(MLRA 6:9)
(Veitsman, Viktor Rakhmil'evich, 1903-1944)

MAKHOTIN, A.A.

Ivan Ivanovich Ezhikov. Trudy Inst.morf.zhiv. no.8:128-129 '54.
(MLRA 6:9)
(Ezhikov, Ivan Ivanovich, 1893-1941)

MAKHOTIN, A.A.

Phylogenetic correlations of principle groups of jumping orthopters and the morphology of their ovipositors. Trudy Inst.morf.zhiv. no.8:5-62 '53.
(MLRA 6:9)
(Orthoptera)

MAKHOTIN, A.A.

Relation of principal groups of jumping orthoptera and the morphology of their ovipositor. Ent.oboz. 32:126-136 '52.
(MLRA 7:1)

1. Institut morfologii zhivotnykh im. A.N.Severtsova Akademii nauk SSSR, Moskva. (Locusts)

MAKHOTIN, A.A.

USHATINSKAYA, R.S.; MAKHOTIN, A.A.

Effect of mineral oil emulsion of DDT on the imago of a new generation of harmful insects. Doklady Akad. nauk SSSR 81 no.5:969-972 11 Dec 51.
(CIML 21:5)

1. Presented by Academician K.I. Skryabin 19 October 1951.
2. Institute of Animal Morphology imeni A.M. Severtsov, Academy of Sciences USSR.

FA 172T3

USSR/Biology - Insect Pests 21 Dec 50

"Effectiveness Against Eurygaster Intergiceps of the Dusting of Fields of Winter Wheat With DDT," D. M. Fedotov, A. A. Makhotin, Inst Animal Morph imeni A. N. Severtsov, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXV, No 6, pp 887,888

Large fields dusted from planes with DDT, hexachlorohexane, and NIUIF-100 in the Krasnodar region by expedition which has studied this particular pest since 1941. Condition of fields, deg of infestation with pest, and meteorological conditions considered. DDT found to be more effective than [illegible], but [illegible]

172T3

USSR/Biology - Insect Pests (Contd) 21 Dec 50

formerly assumed, but application of dust did not result in sufficient percentage of lethality for all phases and ages of insect. Soln of DDT in kerosene found to be better in that respect. Use of mineral oil and kerosene soap emulsions of DDT suggested (cf. "Vest Ak Nauk SSSR" Vol XX, No 10, pp 117-9).

172T3

MAKHOTIN A. A.

MAKHOTIN, A. A. ** Continued

SO: 47, No. 8, 1945; Dok. AN

"Effectiveness against Eurygaster Intergriceps of the Dusting of Fields of Winter Wheat with DDT,"

SO: 75, No. 6, 1950. Dok. AN

MAKHOTIN, A. A.

Mbr., Inst. Animal Morphology im. A. N. /Evolutionary, p. 1949/
Severtsov, Dept. Biol. Sci., Acad. Sci., -1940-c50-.

Mbr., Lab. Invertebrate Morphology, Inst. Evolutionary Morphology im. Severtsov, Acad. Sci., -1940-.

"The Bilateral Relationship of Types of Phylogenetic and Ontogenetic Change of Organs."

SO: Dok. AN, 26, No. 1, 1940;

"Regressive Passage in Form of the Hen-Bird of the Large Frost Spanners (Errannis Defoliaria Cl.) and the Small Frost Spanners (Operophthera Brumata L.),"

SO: 28, No. 4, 1940; Dok. AN

"Concerning the Appearances of Reduction in the Morphology of the Image of the Great Winter Moth (Errannis Delfoliaria Cl.)

SO: No. 8, 1940; Dok. AN

"Behavior of Eurygaster Integriceps Put. at Different Temperatures in the Experiment and in the Field,"

STAMOV-VITKOVSKIY, A. (Moskva); MOSHCHAKOV, V. (Moskva); GETSOV, G. (Moskva)
BYUNOSOV, Yu. (Tyumen'); GOMZOV, V. (Orenburg); MAKHOTIN, A. (Moskva)
KHAYMOV, B.; MAL'TSEV, N. (Orel); MAKSIMOV, D. (Leningrad);
MOKROBORODOV, V. (Sverdlovsk)

Advice from the experienced. Za rul. 19 no.12:18-20 D '61.
(MIRA 14:12)

1. Stantsiya Perlovskaya, Moskovskaya obl. (for Khaymov).
(Motor vehicles--Maintenance and repair)

MAKHOTIN, A., inzh.

Economical driving. Za rul. 19 no. 2:22-23 F '61. (MIRA 14:4)
(Automobile drivers)

MAKHOTIN, A.

Lighting. Za bezop. dvizh. no.6:5-6 N '58.
(Automobiles--Lighting) (MIRA 11:12)

MAKHOTIN, A.

Before starting a trip. Za bezop. dvizh. no.5:3-4 O '58.
(MIRA 11:12)

1.Inspektor otdela sluzhby dvizheniya Glavnogo upravleniya gruzovego avtotransporta Mosgorispolkoma. Za bezop. dvizh. no.5:3-4 O '58.
(MIRA 11:12)
(Motortrucks--Maintenance and repair)

MAKHOTENKO, N.

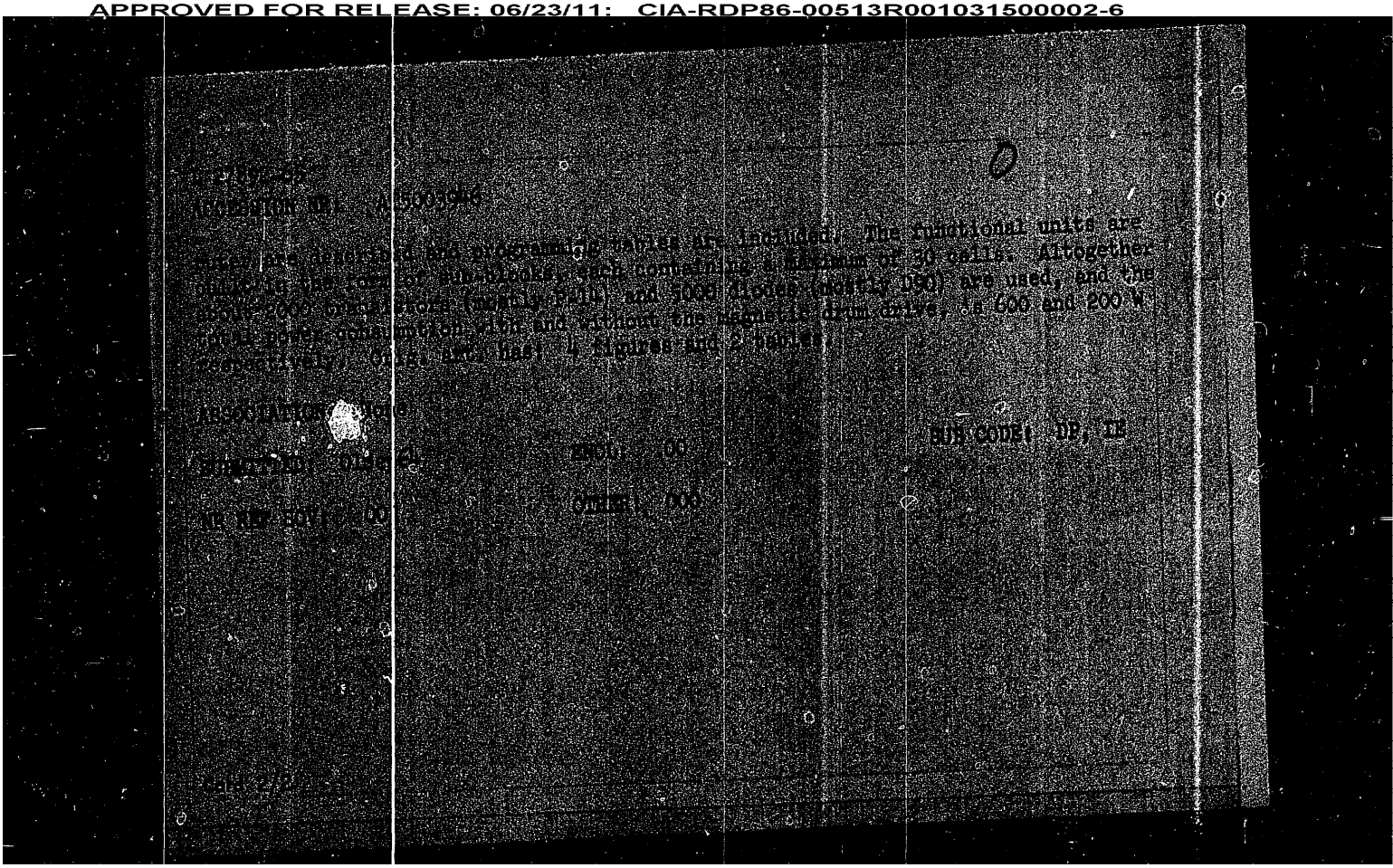
Know your chemistry if you live on a farm. Sov. profsoiuzy 20 no.4:4-6 F '64. (MIRA 17:3)

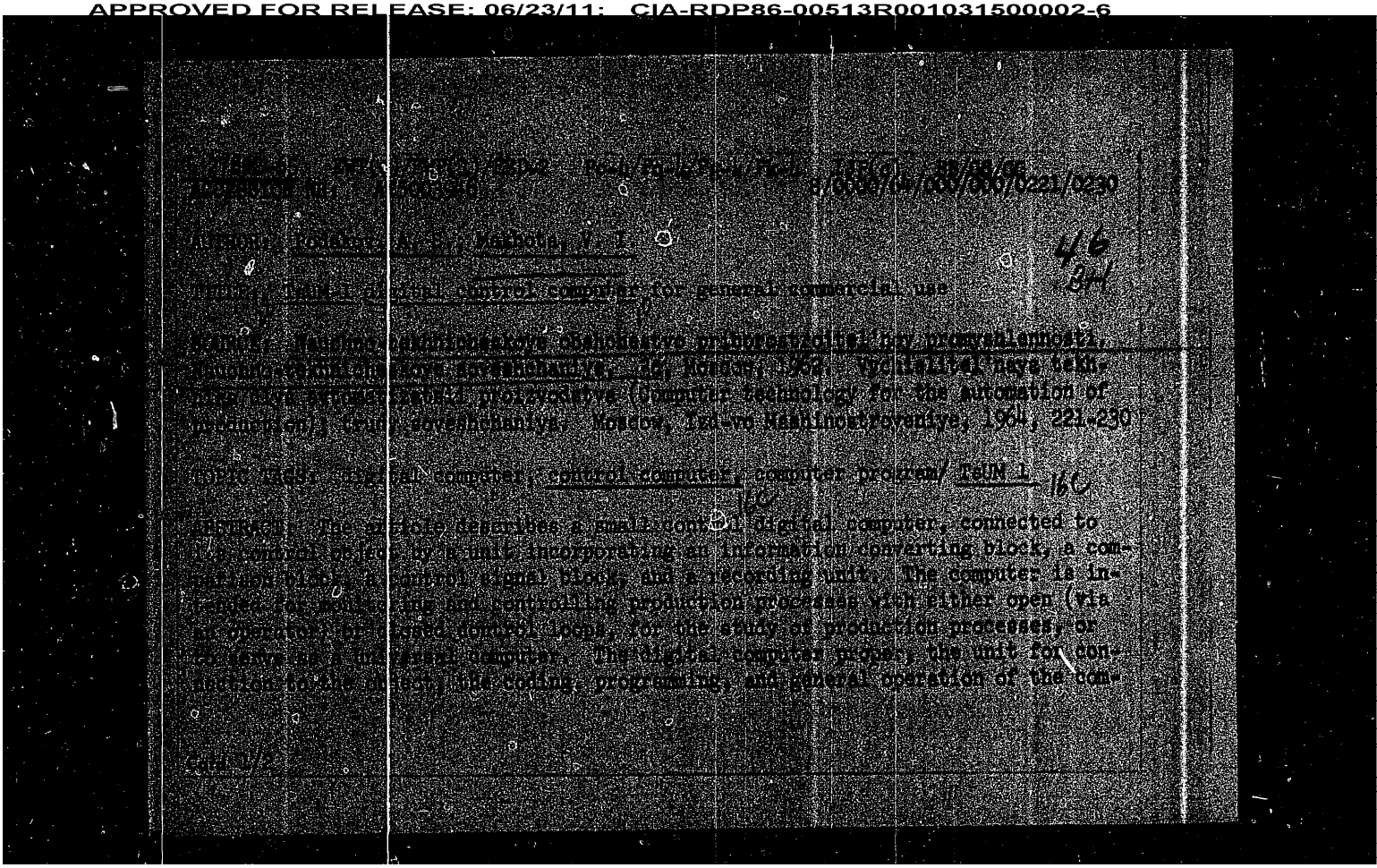
1. Predsedatel' Stavropol'skogo sel'skogo krayevogo soveta professional'nykh soyuzov, Stavropol'.

DROBASHCHENKO, Ivan Tikhonovich; KSENOFONTOV, Aleksandr Nilovich; KRAVTSOV, V.N., prepodavatel', red.; MAKHOTENKO, B.S., prepodavatel', red.; MIRSKAYA, V.V., red.izd-va; IL'INSKAYA, G.M., tekhn.red.

[Fundamentals of electronics and radio engineering] Osnovy elektroniki i radiotekhniki. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1961. 283 p. (MIRA 14:6)

1. Rostovskiy gorno-elektromekhanicheskiy tekhnikum (for Kvartsov). 2. Novocherkasskiy khimiko-tekhnologicheskiy tekhnikum (for Makhotenko).
(Electronics) (Radio) (Transistors)





MAKHOTA, P.S.

High speed steelmaking. Nauka i Zhizn' 22 no.11:25-27 N '55.
(MLRA 9:1)

1.Stalevar metallurgicheskogo zavoda imeni Petrovskogo, g. Dnepropetrovsk.
(Dnepropetrovsk--Steel industry)

MAKHOTA, Petr Semenovich; SHLEPINA, M.M., redaktor; RAKOV, S.I., tekhnicheskiy redaktor

[Speedy founding of steel] TSekh skorostnogo stalevareniia. [Moskva] Izd-vo VTsSPS profizdat, 1955. 68. (MLRA 9:1)

1. Stalevar Dnepropetrovskogo metallurgicheskogo zavoda imeni Petrovskogo. (for Makhota)

(Steel)

ACC NR: AP6034148

A solution is obtained for k = 0 and two values of ξ; ξ = 1 and 0. A plot of $i\Omega$ versus fluid velocity v shows that the parameter ξ has only a small influence on the natural vibration frequency of the plate. Furthermore, the results show that a fluid velocity exists for which the natural frequency of the plate becomes zero. Orig. art. has: 13 equations and 2 figures.

SUB CODE: 20/ SUBM DATE: 25Feb65/ ORIG REF: 005

Card 2/2

ACC NR: AP6034148 (A) SOURCE CODE: UR/0424/66/000/005/0154/0156

AUTHOR: Makhortykh, Zh. K. (Moscow)

ORG: none

TITLE: Vibration of a plate (wing) containing cavities filled with a moving fluid

SOURCE: Inzhenernyy zhurnal. Mekhanika tverdogo tela, no. 5, 1966, 154-156

TOPIC TAGS: vibration, incompressible flow, ideal fluid, partial differential equation

ABSTRACT: The natural vibration frequency of an elastic plate with a cavity completely filled with an incompressible, ideal fluid is analyzed. The governing partial differential equation is reduced to an ordinary differential equation using separation of variables. This is given by

$$X^{IV} + (v^2 - 2d_1k^2)X'' + 2v\Omega\sqrt{\xi}X' + (d_1k^4 + \Omega^2)X = 0$$

$$k = n\pi a/b, \qquad v = ua\sqrt{\rho_2/D_1}$$

$$d_1 = D_3/D_1, \qquad \Omega = \omega a^2\sqrt{(\rho_1+\rho_2)/D_1}, \qquad d_2 = D_2/D_1, \qquad \xi = \rho_2/(\rho_1+\rho_2)$$

with either of the two boundary conditions

$$X(0) = X''(0) = X(1) = X''(1) = 0$$
$$X(0) = X'(0) = X(1) = X'(1) = 0$$

Card 1/2

MAKHORTYKH, Zh.K. (Moskva)

Determination of natural vibration frequencies of a continuous plate. Inzh. zhur. 4 no.2:357-359 '64.
(MIRA 17:8)

1. Institut mekhaniki AN SSSR.

MAKHORTYKH, Zh.K. (Moskva)

Vibrations of a two-span panel in a vacuum. Inzh.zhur.1 no.3:102-108 '61. (MIRA 15:2)

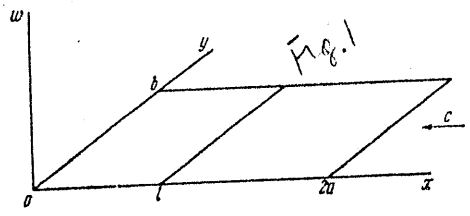
1. Institut mekhaniki AN SSSR.
(Elastic plates and shells—Vibration)

Oscillations of double panel ...

which at least one value of λ becomes complex, is important in investigating stability and for the case of the double panel, the dependence of A* on ξ is discussed by the author, ξ varying from 0 to 2; the conclusions reached are that in order to obtain as high a value of A* as possible, the reinforcing rib should be placed near the middle of the panel and that for the case of a panel clamped along one edge, the magnitude of critical stream velocity does not depend on the direction of flow. There are 2 figures and 5 Soviet-bloc references.

SUBMITTED: April 16, 1959

Fig. 1.



Фиг. 1

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Oscillations of double panel ...

$$F_3(k, \alpha, \beta, \xi) = \frac{2\alpha^2[\operatorname{ch} 2\alpha\xi - \operatorname{ch}\varphi\xi\cos\beta\xi]}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2} + \frac{(k^2+\beta^2-\alpha^2)^2+2\alpha^2(\alpha^2-k^2)}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2}\frac{\operatorname{sh}\varphi\xi}{\varphi}\frac{\sin\beta\xi}{\beta},$$

$$F_4(k, \alpha, \beta, \xi) = -\frac{2\alpha \operatorname{sh} 2\alpha(2-\xi)}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2} + \frac{(\alpha^2+\beta^2+k^2)\cos\beta(2-\xi)}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2}\frac{\operatorname{sh}\varphi(2-\xi)}{\varphi} -$$

$$-\frac{(k^2+\beta^2-3\alpha^2)\operatorname{ch}\varphi(2-\xi)\sin\beta(2-\xi)}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2}\frac{}{\beta},$$

$$\varphi = \sqrt{2k^2 + \beta^2 - 2\alpha^2}.$$

A and λ are given by

$$A = 4\alpha(k^2 - \alpha^2 + \beta^2); \qquad (3)$$

$$\lambda = k^4 + (\alpha^2 + \beta^2)(2k^2 - 3\alpha^2 + \beta^2). \qquad (4)$$

Knowledge of the relation between A and λ is necessary in investigating the stability of motion of the panel and that can be obtained from (2), (3) and (4). The value of derived velocity A*, for

Card 3/4

Oscillations of double panel ...

$$X(x)=\begin{cases}X_1(x)\ 0\leqslant x\leqslant \xi,\\ X_2(x)\ \xi\leqslant x\leqslant 2.\end{cases} \tag{1}$$

where $\xi = l/a$. The case of $\xi = 1$ was considered in (Ref. 4: Op.cit.). Non-trivial solutions of (1) in the intervals $0 \leqslant x \leqslant \xi$, $\xi \leqslant x \leqslant 2$ give on change of variables into α and β,

$$F_1(k, \alpha, \beta, \xi)F_2(k, \alpha, \beta, \xi) - F_3(k, \alpha, \beta, \xi)F_4(k, \alpha, \beta, \xi) = 0 \tag{2}$$

where

$$F_1(k, \alpha, \beta, \xi)=\frac{2\alpha \operatorname{sh} 2\alpha\xi}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2}-\frac{(\alpha^2+\beta^2+k^2)\cos\beta\xi}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2}\frac{\operatorname{sh}\varphi\xi}{\varphi}+$$

$$+\frac{(k^2+\beta^2-3\alpha^2)\operatorname{ch}\varphi\xi}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2}\frac{\sin\beta\xi}{\beta},$$

$$F_2(k, \alpha, \beta, \xi)=\frac{2\alpha^2[\operatorname{ch}2\alpha(2-\xi)-\operatorname{ch}\varphi(2-\xi)\cos\beta(2-\xi)]}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2}+$$

$$+\frac{(k^2+\beta^2-\alpha^2)^2+2\alpha^2(\alpha^2-k^2)}{(3\alpha^2-\beta^2-k^2)^2+4\alpha^2\beta^2}\frac{\operatorname{sh}\varphi(2-\xi)}{\varphi}\frac{\sin\beta(2-\xi)}{\beta},$$

Card 2/4

MAKHORTIKH, Zh. K.

27793
S/508/60/028/000/004/022
D237/D305

10.7500 1103, 2808, 2607

AUTHOR: Makhortykh, Zh.K. (Moscow)

TITLE: Oscillations of double panel in a gaseous stream

PERIODICAL: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk. Inzhenernyy sbornik, v. 28, 1960, 51 - 54

TEXT: The author considers an elastic panel (Fig. 1) in a supersonic gas flow of velocity c, supported along the whole contour and along the rib x = 1. Statement of the problem, solution method and symbols are taken from the author's earlier work (Ref. 4: Ustoychyvost' mnogopoletnoy paneli, dvizhushcheysya v gazye. Izv. AN SSSR, OTN "Seriya mekh. i mashinostr. no. 2, 1959). The problem under investigation is that of solution of the boundary problem

$$X^{IV} - 2k^2X'' - \Lambda X' + k^4X = \lambda X; \tag{1}$$

$$X_1(0) = X_1'(0) = X_2(2) = X_2'(2) = 0,$$

$$X_1(\xi) = X_2(\xi) = 0,\ X_1'(\xi) = X_2'(\xi),\ X_1''(\xi) = X_2''(\xi),$$

Card 1/4

MAKHORTYKH, Zh. K. Cand Phys-Math Sci -- "Stability of a multispan panel in supersonic flow of gas." Mos, 1960. (Mos Order of Lenin and Order of Labor Red Banner State Univ im M. V. Lomonosov). (KL, 1-61, 180)

Stability of a Panel on Many Supports Moving in Gas

lies on the curve 1 in Fig 3). In this case $\nu = e^{-\pi}$ which can be obtained from Eq (2.7) and is represented in Fig 4 for $n = 1$, $k = \pi$. There are 4 figures and 6 references, of which 3 are Soviet and 3 English.

ASSOCIATION: Kafedra teorii uprugosti Moskovskogo gosudarstvennogo universiteta (Chair of Theory of Elasticity, Moscow State University)

SUBMITTED: June 30, 1958.

Card 3/3

Stability of a Panel on Many Supports Moving in Gas

then the Eq (1.9) is obtained, which can be represented as a graph in Fig 2. The corresponding values of λ in relation to the Eqs (1.7) and (1.8) can be found from Eq (1.10-, which can be applied for in λ . The solution of the Eq (1.7) can be shown as a linear equation (2.1), when A , k and λ are constant. For $0 \leqslant x \leqslant 1$, $1 \leqslant x \leqslant 2$ a function $\Phi (z_1, z_2, z_3, z_4) = 0$ and the function (2.2) can be calculated when the values of A and γ are expressed by Eqs (2.3) and (2.4). The last two equations are called the characteristics of the system, for which A and k are considered as known and α and β are unknown. The values Eq (2.5) correspond to Eq (2.6) in the formula (2.4), i.e. the solutions of Eqs (2.5) and (2.6) can be defined as the curves in the planes α , β and A , λ correspondingly, as shown in Fig 3, where 1 and 3 represent the roots of the curve $F_1(k, \alpha, \beta) = 0$. The properties of the oscillation of the panel can be illustrated as in Fig 3, ie in the case of a 2-support panel with A = 0 the oscillation shown in Fig 4a has $A' = 16\pi^3$ ($A' = 0.97\ A_1$, the point A', λ'

SOV/179-59-2-30/40

AUTHOR: Makhortykh, Zh. K. (Moscow)

TITLE: Stability of a Panel on Many Supports Moving in Gas (Ustoychivost' mnogoproletnoy paneli, dvizhushcheysya v gaze)

PERIODICAL: Izvestiya Akademii nauk SSSR OTN, Mekhanika i mashinostroyeniye, 1959, Nr 2, pp 174-177 (USSR)

ABSTRACT: The problem of vibration of a panel on many supports moving in gas with supersonic velocity is discussed by the author. A body of aerodynamic shape moving with the velocity c can be described by the Eq (1.1) (Fig 1), where D - magnitude of the deflection of the panel, h - thickness, E , ν and ρ - Young modulus, Poisson's coefficient and density respectively, q - residual gas pressure obtained from Eq (1.2) (t - gas pressure, $\varkappa$ - index of gas polytropy, c_0 - sound velocity in gas). If v/a , x/a , i/b are taken instead of w , x and y , then Eq (1.3) will be obtained, for which the limiting conditions are given in Eqs (1.4) and (1.5). The solution of Eq (1.3) can be shown as Eq (1.8). When the complex frequency $\mathrm{Re}\omega_2 < 0$,

Card 1/3

ZAKHAR'YEVSKIY, M.S.; GATILOVA, Ye.G.; MAKHORTYKH, S.V.

Conductance of sodium acetate and ferrous acetates in aqueous acetic acid solutions. Vest. LGU 18 no.22:105-113 '63.

Conductance method of studying the complex formation of ferric acetate in aqueous acetic acid solutions. Ibid.:114-119 (MIRA 17:1)

ACCESSION NR: AT3002072

velocity, in which the escaping liquid continues to flow along the plane. Equations are found which for an infinitely large adiabatic exponent and constant density reduce to previously obtained expressions for an incompressible liquid. It is noted that the solution for this problem can be obtained by suitable transition to the limit of the Troshin solution to the problem of the outflow of a gas moving along a channel through an aperture in the wall. Orig. art. has 5 figures and 24 numbered equations.

ASSOCIATION: none

SUBMITTED:	00	DATE ACQ:	01May63	ENCL:	00
SUB-CODE:	AS, AI	NO REF SOV:	003	OTHER:	000

Card 2/2

ACCESSION NR: AT3002072 S/2632/62/000/023/0232/0238

AUTHOR: Makhorty*kh, G. V.

TITLE: Outflow of a liquid or gas moving along a plane through an aperture in that plane

SOURCE: Moscow. Tsentral'nyy aero-gidrodinamicheskiy institut. Promyshlennaya aerodinamika. no. 23, 1962. Struynyye techeniya, 232-238.

TOPIC TAGS: aerodynamics, hydrodynamics, gas dynamics, fluid dynamics, outflow, efflux, effluence, compressible flow, incompressible flow, outflow through aperture, outflow through orifice

ABSTRACT: This theoretical paper examines the problem of the efflux of a liquid and gas flowing along a plane through an aperture in that plane. The problem is solved for a liquid by the N. Ye. Zhukovskiy method, and for a gas by the approximate S. A. Chaplygin method. The equations for the boundary streamlines of the jet, the angle of its flare-off from the wall, and its thickness are found. Two limiting cases are examined: (a) The efflux from an infinitely large vessel filled with a quiescent liquid, whereupon the results previously obtained by N. Ye. Zhukovskiy are found; (b) the case of an initial velocity equal to the outflow

Card 1/2

20226

S/135/61/000/004/002/012
A006/A101

Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

Figure 3:

Changes in the hydrogen content liberated from 1 cm^2 of wire surface differently treated: I - the wire was etched in a solution of orthophosphoric acid with addition of potassium bichromate; II - wire after electropolishing
a) Volume of hydrogen liberated
b) Washed in CCl_4; etched in a solution of orthophosphoric acid with addition of potassium bichromate
c) Washed in CCl_4 and roasted at 400°C for 1 h.

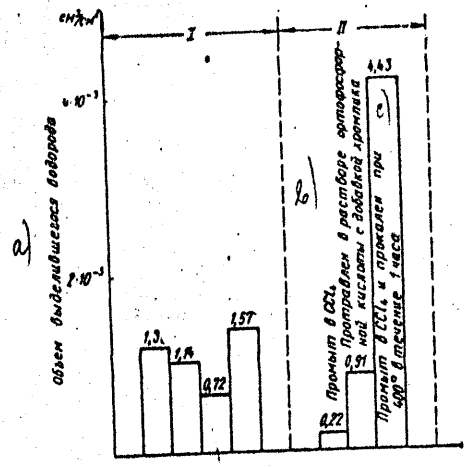

Рис. 3. Изменение количества водорода, выделяющегося с 1 $см^2$ поверхности проволоки, прошедшей различную обработку: *I* — проволока протравлена в растворе ортофосфорной кислоты с добавкой хромпика; *II* — проволока после электрополировки.

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A006/A101

Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

Figure 2:

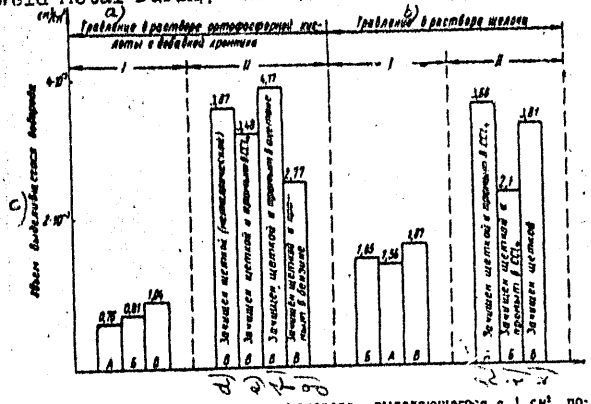

Рис. 2. Изменение количества водорода, выделяющегося с 1 см² поверхности пластин, прошедших различную обработку: А — хранение 1 сутки; Б — хранение 2 суток; В — хранение 10 суток; I — без дополнительной обработки; II — с дополнительной обработкой перед анализом

Changes in the hydrogen content; liberated from 1 cm^2 of plate surfaces differently treated: A - storage for 24 h; B - storage for 10 days; I - without additional treatment; II - with additional treatment prior to analysis a) etching in a solution of orthophosphoric acid with addition of potassium bichromate; b) Etching in alkaline solution; c) Volume of hydrogen liberated; d) cleaned with metallic brush; e) cleaned with brush and washed in CCl_4; f) Cleaned with brush and washed in acetone; g) Cleaned with brush and washed in benzine; h) cleaned with brush and washed in CCl_4 i) Cleaned with brush and washed in CCl_4; k) cleaned with brush

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A006/A101

Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

Table 1:

Number of prescription	Composition of etching bath	Technology of etching and subsequent treatment
1	Orthophosphoric acid 25 cm^3, potassium bichromate 0.01 - 0.03 g; water 1,000 cm^3	Bath temperature 30°C; etching time 15 min; washing in warm water, rubbing with a cloth. Washing in cold running water. Drying at 60°C.
2	Caustic soda 50 g; water 1,000 cm^3	Bath temperature 60°C. Etching time 20 min. Washing in cold running water. Claryfying in 15 % HNO_3 solution at 60-65°C. Washing in warm water. Washing in cold water. Drying at 60°C.
		Electrolytical polishing

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Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

that its specific surface and consequently the amount of hydrogen additionally dissolved in the weld metal might be reduced. 4. The part of the base metal in the formation of the weld should be increased. Therefore welding should not be performed on intensively cooled copper plates having on their surface a higher content of adsorbed moisture. The latter may participate in the reaction with the metal and cause additional hydrogen dissolving in the pool. 5. Wire and parts brought from a cold into a warm room should not be welded to prevent condensation of moisture on their surfaces, which is equivalent to artificial wetting. Further investigations should be directed on the development of efficient methods of preparing the surfaces of parts, and on efficient storage conditions. Means should be found of binding the hydrogen in the gaseous phase into compounds which are not soluble in the metal and are stable at high temperatures. There are 2 tables and 5 figures, and 5 Soviet references.

ASSOCIATION: MATI

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ed at MATI by semi-continuous casting. Hydrogen content in the ingots was checked by vacuum extraction. Plates rolled from the ingots were treated prior to welding by various variants given in Table 1. After welding, the hydrogen in the weld metal was determined using methods and equipment described in Ref. 1. The results obtained show that in all the experimental welds an increase in the hydrogen content was observed as compared to its initial concentration in the pool. The total volume of pores in the weld metal depends on their hydrogen content, whereby the formation of the first pores was observed at hydrogen concentrations over 0.7 cm^3 per 100 g of metal. It was found that the basic source of hydrogen was the moisture absorbed on the surface of the wire and the base metal. Additional experiments were carried out to determine the amount of hydrogen liberated during heating up to 650°C from the wire and plate surface, treated differently and after different storage time (Fig. 2, 3). As a result of the experimental investigation the following recommendations are given to prevent pore formation in the weld metal during welding of Al and its alloys: 1. Etching of the wire and the parts should be performed in a solution of orthophosphoric acid by variant 1 (Table 1). In some cases the wire should be electropolished. It is not recommended to clean the edges with an iron brush. 2. Storage of the wire and the parts prior to welding for more than 5 - 6 days should be avoided. Gloves should be used when charging the wire into the container. 3. It is recommended to use large-diameter wire so

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A006/A101

AUTHORS: Nikiforov, G. D., Candidate of Technical Sciences, Maknertova, A. G., Engineer

TITLE: Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

PERIODICAL: Svarochnoye proizvodstvo, 1961, No. 4, pp. 6 - 10

TEXT: In spite of a great number of publications on the causes and mechanism of pore formation in welding of aluminum and its alloys, many basic problems in this field have not been solved. In particular, it is as yet not known which are the most dangerous hydrogen sources from the point of view of its increased concentration in the welding pool. The authors carried out investigations to obtain more precise data on this problem, which predetermines the selection of effective means against pore formation. Aluminum plates, 7 mm thick, were welded or built-up under the following conditions: 240 amp current, 18 v arc voltage, welding speed 18 m/hr; argon consumption 10 - 15 l/min; diameter of filler wire 1.3 mm, temperature of heating the backing plate 50 - 60°C; controlled moisture of argon and the surrounding atmosphere. The plates and wire were made from ingots produc-

Card 1/6

Conditions of Pore Formation When Welding Aluminum and its Alloys

Table 2:

Hydrogen concentration in $cm^3/100$ g			Hydrogen content in the weld metal in $cm^3/100$ g		
In the plates	in the wire	in the welding pool	in the solution $[H]_S$	in the [H] pore	total $[H]_a$
0.08	0.08	0.08	1.03	0.45	1.48
0.945	0.08	0.6941	1.14	0.3	1.44
0.945	0.62	0.8442	1.16	0.15	1.31

There are 5 figures, 2 tables and 3 Soviet references.

ASSOCIATION: MATI

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89666

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A006/A001

Conditions of Pore Formation When Welding Aluminum and its Alloys

Table 1:

Hydrogen concentration in $cm^3/100$ g			Hydrogen concentration in the weld metal in $cm^3/100$ g		
In the plates	in the wire	in the welding pool (initial)	in the solution $[H]_S$	in the pores $[H]$ pore	total $[H]_a$
0.08	0.62	0,3582	0.684	-	0.685
0.08	0.62	0.2906	0.884	0.17	1.064
0.08	0.08	0.08	0.54	-	0.54
0.08	0.08	0.08	0.59	-	0.59
0.08	0.62	0.737	0.72	0.064	0.784
0.08	0.62	0.2582	0.687	-	0.687
0.08	0.62	0.2582	0.789	0.108	0.897
0.08	0.62	0.2906	0.872	0.17	0.042
0.08	0.62	0.3338	0.98	0.28	1.26
0.08	0.62	0.2744	0.819	0.13	0.949
0.08	0.62	0.2582	0.89	0.16	1.050

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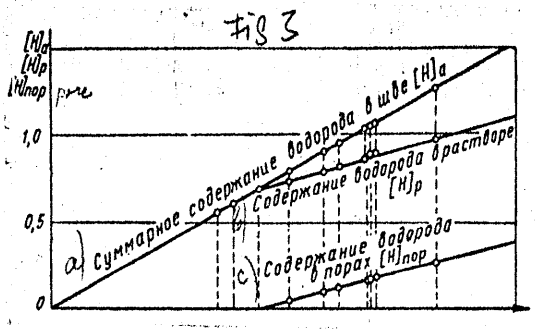
A006/A001

Conditions of Pore Formation When Welding Aluminum and its Alloys

Figure 3:
Hydrogen distribution in the weld metal between the pores and the solution
a) Total hydrogen content in the weld $[H]_a$
b) Hydrogen content in the solution $[H]_S$
c) Hydrogen content in the pores [H] pore

Fig 3



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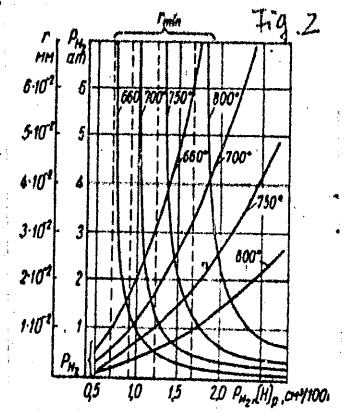
Conditions of Pore Formation When Welding Aluminum and its Alloys

aluminum wire with different degrees of gasification. Data obtained (Table 2) confirm the aforementioned concepts, insofar as the total hydrogen content in the weld and the pores decreases at a higher initial hydrogen concentration in the pool. The distribution of pores in the weld metal is also in a satisfactory agreement with the theories presented.

Figure 2:
Changes in the hydrogen pressure P_{H_2} and minimum values of the radius r_{min} of nucleation microcavities depending on the concentration of $[H]_S$ dissolved in the metal for 660, 700, 750, and 800°C.

Fig. 2



Card 4/7

Conditions of Pore Formation When Welding Aluminum and its Alloys

higher hydrogen concentration in the metal its content in the solution remains practically constant attaining 1.5 - 1.7 cm^3/100 g. All the hydrogen above this limit is separated out in the form of pores. The authors based their concepts on the assumption that the liquid metal suffers an 1-atm pressure from the surrounding atmosphere. This is applicable for pure aluminum. When welding aluminum alloys, a portion of the liquid enclosed between the crystals, which were already formed, is not subjected to external pressure. In this case bubble formation can be expected at an internal pressure below 1 atm, and, consequently, at a lower hydrogen concentration in the pool. The possibility is investigated of eliminating hydrogen bubbles floating up in the pool. It can be assumed that degassing of the metal as a result of the floating up of bubbles is only possible at a hydrogen concentration in the pool exceeding 0.69 cm^3/100 g. The conclusion is drawn that the elimination of bubbles depends on the initial hydrogen concentration in the pool. Under conditions of metal cooling, as in welding, the elimination of bubbles from the pool is only possible when welding gasified metal and is hardly probable in the case of a metal with a relatively low content of dissolved hydrogen. To check these conclusions the authors determined the hydrogen content of beads welded on aluminum plates with a different hydrogen content, using 1.3 mm

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Conditions of Pore Formation When Welding Aluminum and its Alloys

the formation of bubbles at 600°C occurs at hydrogen concentrations of 0.7, 0.8 and 0.9 $cm^3/100$ g in the presence of microcavities with a minimum radius of 0.357; 0.03105, and 0.0192 mm respectively. At higher temperatures the hydrogen concentration in the pool must be higher. To confirm the aforementioned calculational data the authors carried out experimental welding and building-up of aluminum plates containing 0.08 $cm^3/100$ g hydrogen, using 1.3 mm wire with 0.08 and 0.62 $cm^3/100$ g hydrogen. Welding of plates and building up of beads was made with 240 amps current; 17 v arc voltage; 18 m/hr welding speed. Argon with a dew point minus 35 - 45°C was used. The different hydrogen content in the welds was assured by different treatment of the plates and the wires. The hydrogen content in the weld was determined with the aid of methods and equipment developed by MATI (Ref.1). Results obtained are given in Table 1 and Figure 3. The data obtained show that the formation of pores in the weld metal is observed only at a hydrogen concentration of over 0.7 $cm^3/100$ g. At a lesser content of dissolved hydrogen, pores were not revealed; this confirms the aforementioned concepts. At a hydrogen content within 0.7 - 1.3 $cm^3/100$ g, the amount of hydrogen in the solution and the pores increases proportionally to the total content of hydrogen in the weld. At a

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AUTHORS: Nikiforov, G. D., Candidate of Technical Sciences, Makhortova, A. G. Engineer

TITLE: Conditions of Pore Formation When Welding Aluminum and its Alloys

PERIODICAL: Svarochnoye proizvodstvo, 1961, No. 3, pp. 5-8

TEXT: Numerous investigations have shown that the basic cause for the appearance of pores in the metal during casting and welding of aluminum and its alloys, is the liberation of dissolved hydrogen out of the liquid metal during cooling. The origination of a hydrogen bubble in the liquid metal depends on the following basic conditions: the hydrogen pressure in the bubble must be higher than the external pressure; microcavities with a final magnitude of radius ($r \rightarrow P_{H_2} \rightarrow \infty$) must be present in the metal; the pressure of molecular hydrogen must be sufficiently high. The authors calculated changes in hydrogen pressure depending on its concentration in the metal at 660, 700, 750 and 800°C, and determined minimum values of the radii of microcavities, necessary for the formation of bubbles at the same temperatures and at different concentrations of hydrogen dissolved in the pool. The results obtained are given in Figure 2 and show that

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A006/A001

A Method of Determining Hydrogen Content in Seam Metal and the Equipment Used

system. The installation (Fig. 1, 2) includes both an extracting and analyzing system. The extracting system consists of a preheating furnace with a quartz tube, a charge device, diffusion pumps and mercury seals. The analyzing system includes a compression manometer for the measurement of the gas pressure, a gas-collecting balloon and a palladium capillary placed in a heater. Evacuation is performed by a forevacuum oil pump and two mercury vapor diffusion pumps. The installation ensures high hermeticity and accuracy of measurement of the changes in the volume. The total H content in the metal is found by summing up the hydrogen in the pores and in the solution. The H content in the solution is determined by vacuum extraction; H in the pores is found by the weight method. Special experiments were made to set up optimum conditions of H analysis at an initial H content in the ingot as high as 0.69 $cm^3/100$ g, which are: preliminary evacuation time: 2.5 hours; time of extraction from the specimen: 1 hour; time of H diffusion through the capillary: 10 min. The method and equipment may be used to determine hydrogen in the seam when welding various metals; to study kinetics of H and metal interaction during welding process; to determine the effect of H on the properties of the seam metal and to reveal various defects arising in the weld joints. There are 4 tables, 7 figures, and 2 Soviet references.

ASSOCIATION: MATI

Card 2/2

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A006/A001

1.2360 only 2208, also 2408

AUTHORS: Nikiforov, G. D., Candidate of Technical Sciences, Makhortova, A. G., Engineer

TITLE: A Method of Determining Hydrogen Content in Seam Metal and the Equipment Used

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 10, pp. 13-16

TEXT: At the department "Technology of the Welding Practice" of MATI a method was developed an an equipment devised for determining the hydrogen content in Al welds. Two 7 mm thick pure aluminum plates with an initial H content of 0.03 cm^3/100 g, were welded on a copper backing in argon atmosphere with consumable electrodes of 1.3 mm diameter and 0.62 cm^3/100 H content. Specimens were turned from the central portion of the weld joint and stored in tetrachloride carbon. The determination of H was made by the method of vacuum extraction on an installation developed with the assistance of A. P. Gudchenko, using a palladium capillary instead of an oxidizer. The method is based on the heating of the specimen to a temperature at which a sufficiently effective H liberation takes place. Heating is performed in a vacuum and the amount of gas liberated is determined from changes in the pressure at a given volume of the

Card 1/2

MAKHORTOV, M.A.

RUTKEVICH, N.V. (g. Izyaslav, Khmel'nitskaya oblast'); MAKHORTOV, M.A.

Useful advice. Fiz. v shkole 16 no.6:64-65 N-D '56. (MLRA 9:12)

1. 15-ya Srednyaya shkola, g. Yelets (for Makhortov).
(Physics--Experiments)

LEPSKAYA, Ye.S., kand.med.nauk; MAKHOTINA, T.A.

Clinical and roentgenological diagnosis of pancreatic cysts. Nauch.trudy Chetv.Mosk.gor.klin.bol'. no.1:356-364 '61. (MIRA 16:2)

1. Iz Moskovskoy gorodskoy klinicheskoy bol'nitsy No.4 (glavnyy vrach A.G. Papko) i kafedry gospital'noy terapii 2-go Moskovskogo gosudarstvennogo meditsinskogo instituta imeni N.I. Pirogova (zav. - prof. P.Ye. Lukomskiy).

(PANCREATIC CYSTS)

MARKHININ, Ye.K.; SIRIN, A.N.; TIMERBAYEVA, K.M.; TOKAREV, P.I.;
MAKHORKIN, I.F., red.

[Volcanoes of Kamchatka and the Kurile Islands] Vulkany Kamchatki i Kuril'skikh ostrovov. Petropavlovsk-Kamchatskii, Knizhnaia red. "Kamchatskaia pravda," 1959. 85 p.
(MIRA 17:4)

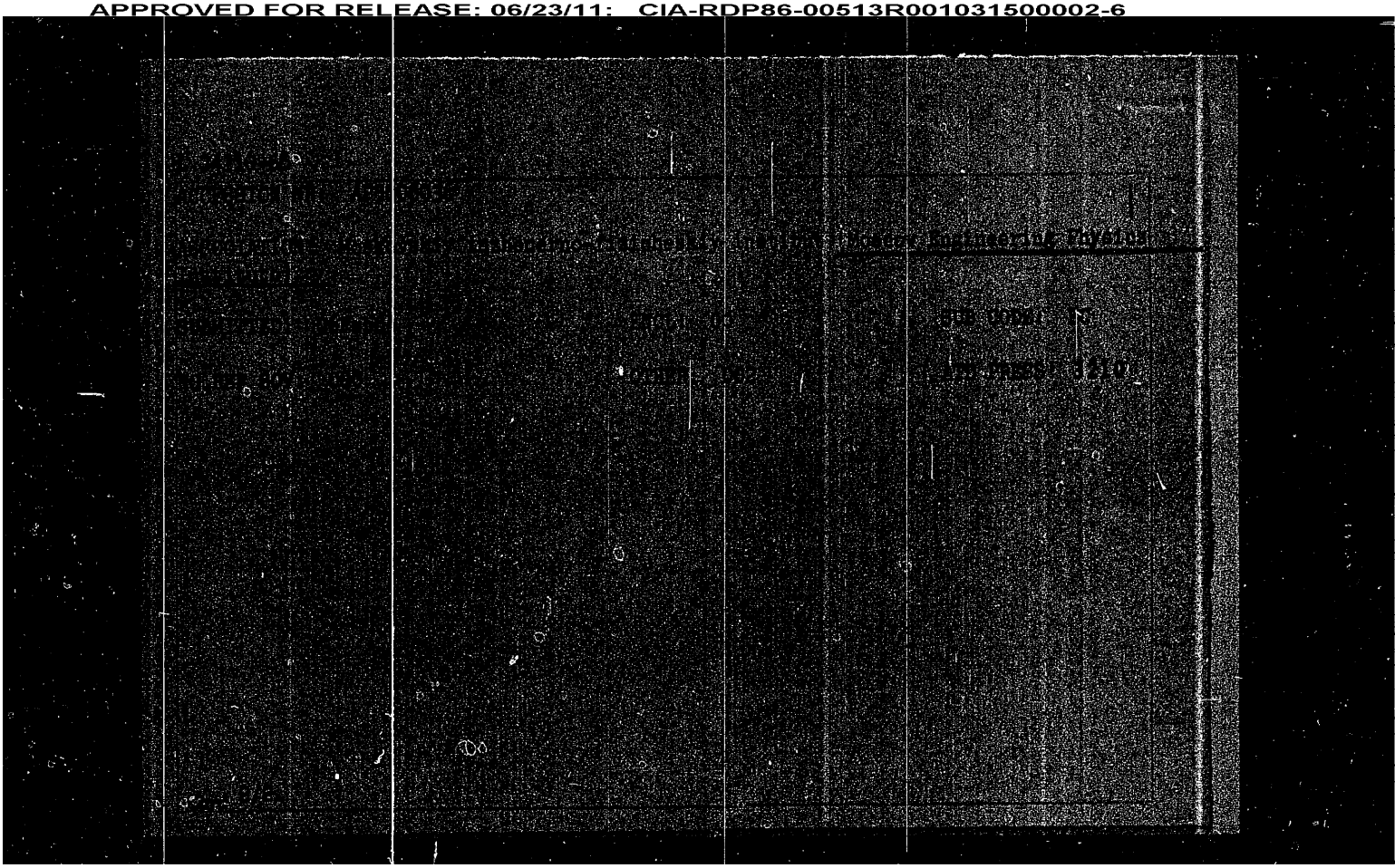
GLUSHKOV, S.; MAKHORKIN, I.

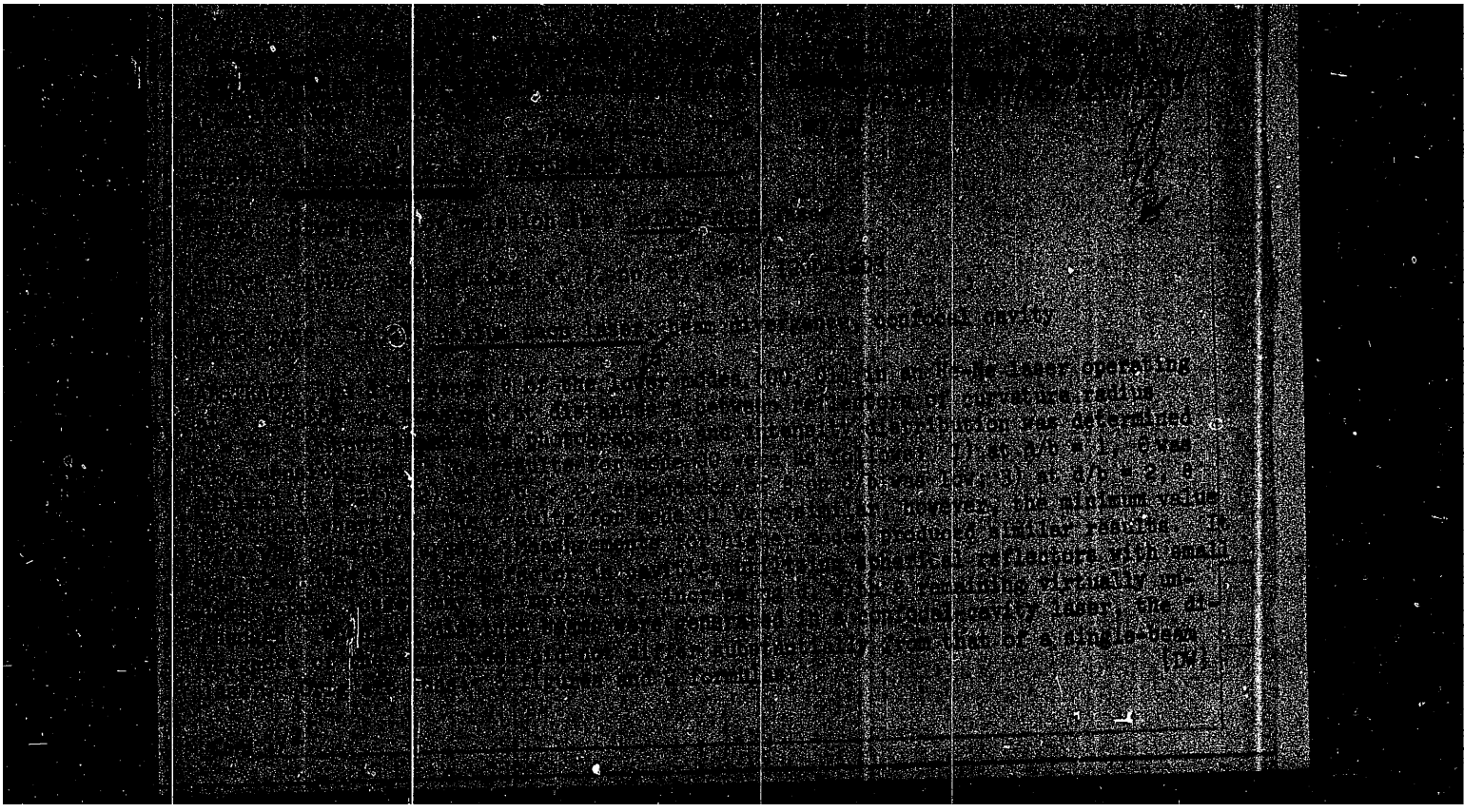
[Soviet Kamchatka] Sovetskaia Kamchatka. Moskva, Izd-vo "Znanie", 1953. 31 p. (MLRA 6:11)
(Kamchatka)

PERLI, S.B.; MAKHORIN, V.M.

Technical consultation. TSement 29 no.4:22 Jl-Ag '63.
(MIRA 16:11)

1. Yuzhgiprotsement.





MAKHORIN, K.Ye. [Makhorin, K.IE.]; GLUKHOMANYUK, A.M. [Hlukhomaniuk, A.M.]

Production of activated carbon from anthracite in fluidized bed ovens. Khim.prom. [Ukr.] no.2:22-25 Apr-Je '65. (MIRA 18:6)

KHARCHENKO, N.V.; MAKHORIN, K.Ye.

Intensity of heat transfer between a fluidized bed and the immersed body at high temperatures. Inzh.-fiz. zhur. 7 no.5:11-17 My '64. (MIRA 17:6)

1. Institut ispol'zovaniya gaza AN UkrSSR, Kiyev.

DOBROHOTOV, N. N. [Dobrokhotov, N. N.]; MAHORIN, K. E. [Makhorin, K. Ye.]; NICIPORENKO, O. S. [Nichporenko, O. S.]

Experiments for the direct obtainment of iron from the ores in fluidized layer. Analele metalurgie 15 no.4:28-34 O-D '61.

(Iron--Metallurgy) (Reduction) (Fluidization)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500002-6

S/137/61/000/011/015/123
A060/A101

AUTHOR: Makhorin, K.Ye.

TITLE: Conversion of natural gas for the reduction of iron ores

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 11, 1961, 15, abstract 11V114 ("Gaz. prom-st'", 1961, no. 4, 45 - 50)

TEXT: The possible schemes for converting CH_4 to obtain gases for the direct reduction of Fe are briefly described. A scheme is cited of a burner for the incomplete combustion of CH_4 with the production of reducing gas. For the practically complete conversion of CH_4 at 1,200-1,500°C the O_2 concentration in the gas-oxygen mixture should constitute 40-42%.

V. Knyazev

[Abstracter's note: Complete translation]

Card 1/1

DOBROKHOTOV, N.N.; MAKHORIN, K.Ye.; NICHIPORENKO, O.S.

Testing the direct processof producing iron from ores in a fluidized bed. Izv.vys.ucheb.zav.; chern.met. no.4:26-30 '61. (MIRA 14:4)

1. Institut ispol'zovaniya gaza AN USSR.
(Iron--Metallurgy) (Fluidization)

MAKHORIN, K.Ye.; BUGAYENKO, B.P.

Selecting furnaces and fuels for the magnetization roasting of Krivoy Rog quartzites. Metallurg 5 no.10:3-7 O '60. (MIRA 13:9)

1. Institut ispol'zovaniya gaza AN USSR.
(Krivoy Rog--Quartzite)
(Ore dressing)

NICHIPORENKO, O.S.; MAKHORIN, K.Ye.

Gas-oxygen burner for the production of a reducing gas.
Gaz. prom. 4 no.11:23-26 '59. (MIRA 13:2)
(Gas burners)

CHERTOV, V.M.; MAKHORIN, K. Ye.; KOGANOVSKIY, A.M.

Combining processes for the production and regeneragtion of activated anthracite. Khim.prom. no.7:635-637 O-N '59. (MIRA 13:5)

(Carbon, Activated) (Anthracite)

DOBROKHOTOV, N.N., akademik; MAKHORIN, K.Ye., inzh.

Direct production of metallic iron from ores without the blast furnace process. Izv.vys.ucheb.zav.; chern.met. no.10:3-13 O '58. (MIRA 11:12)

1. Institut ispol'zovaniya gaza AN USSR.
(Iron--Metallurgy)

MAKHORIN, K.YE.

73-1-22/26

AUTHOR: Kul'skiy, L. A., Koganovskiy, A. M., Makhorin, K. Ye., Kaliniychuk, Ye. M., Chertov, V. M. and Dikolenko, Ye. I.

TITLE: Production of Active Anthracite Suitable for the Purification of Waste Waters of the Aniline-Dye Industry. (Polucheniye Aktivirovannogo Antratsita, Prigodnogo Dlya Ochistki Stochnykh Vod Anilinokrasochnoi Promyshlennosti.)

PERIODICAL: Ukrainskiy Khimicheskiy Zhurnal, 1957, Vol. 23, No.1, pp. 117 - 121 (USSR).

ABSTRACT: Laboratory and pilot plant investigations on the activation of anthracite by water vapour and a mixture of combustion products of carburetted benzene with water vapours at 800 - 950° C are described. It was found that the quality of obtained adsorbents depended on the treatment of the anthracite. The activated anthracite contained 150 - 200 mg/g phenol and up to 300 mg/g methylene. The activation of anthracite gives an absorbent with a phenol content of 125 - 165 mg/g and a methylene content of 120-130 mg/g. Activated coal KAD is produced. The usefulness of the activated anthracite for sorption purification of waste waters of the aniline-dye industry is evaluated. The kiln for the activation of anthracite is illustrated and described. The properties of activated anthracite

Card 1/2

MAKHORIN, N.Ye.

Units with moving packing for the pyrolysis of liquid products.
Gaz. prom. no.3:31-35 Mr '57. (MIRA 12:3)
(Gas manufacture and works--Equipment and supplies)
(Cracking process)

MAKHORIN, K.Ye.; PIORO, L.S.; CHERTOV, V.M.; GLUKHOMANYUK, A.M.

Gasification of milled peat in a unit with moving packing. Torf.prom. 34 no.1:28-32 '57. (MLRA 10:2)

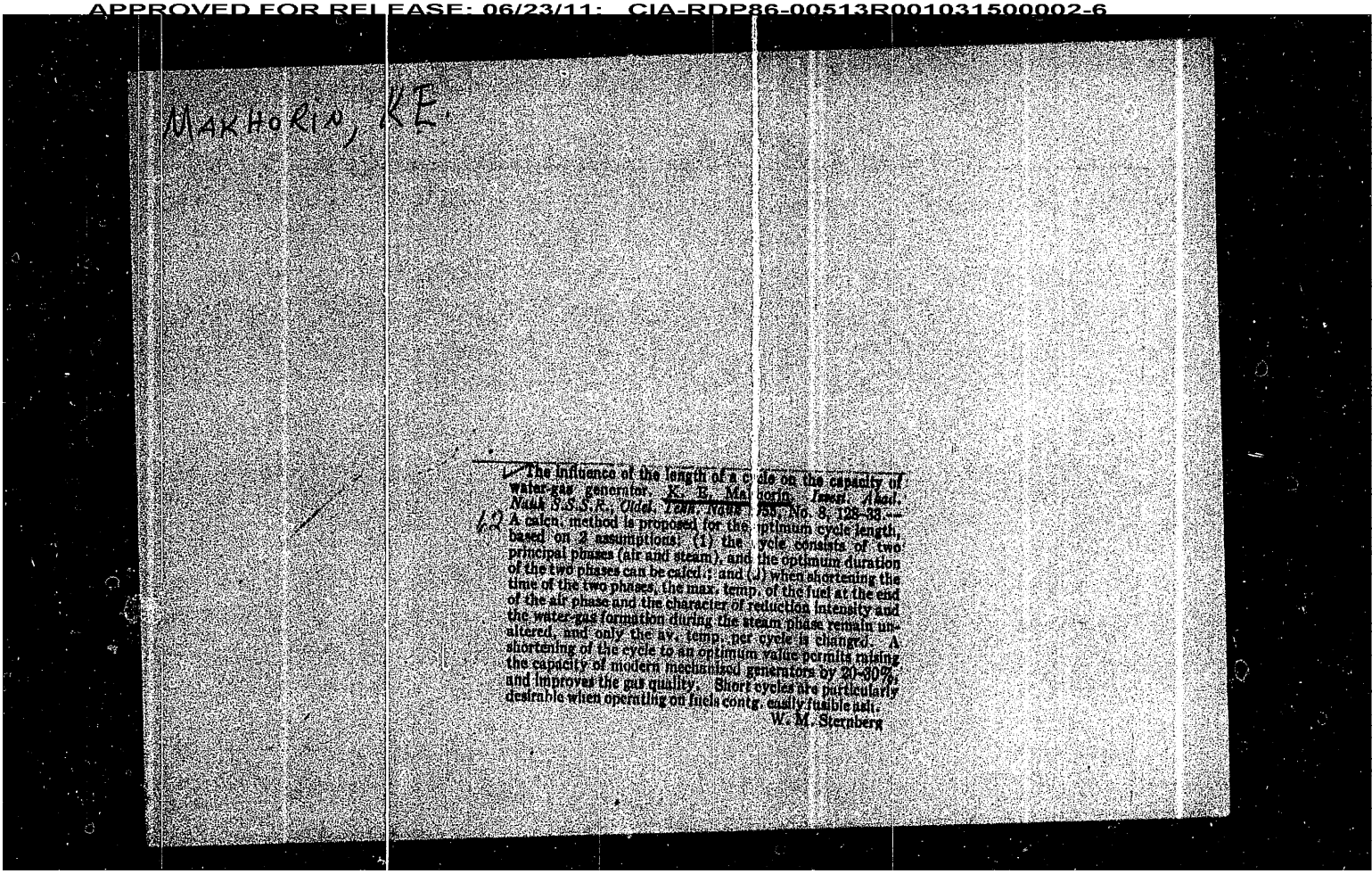
1. Institut ispol'zovaniya gaza AN USSR.
(Peat) (Gas producers)

MAKHORIN K. Ye.

KUL'SKIY, L.A.; KOGANOVSKIY, A.M.; MAKHORIN, K.Ye.; KALINIYCHUK, Ye.M.; CHERTOV, V.M.; DIKOLENKO, Ye.I.

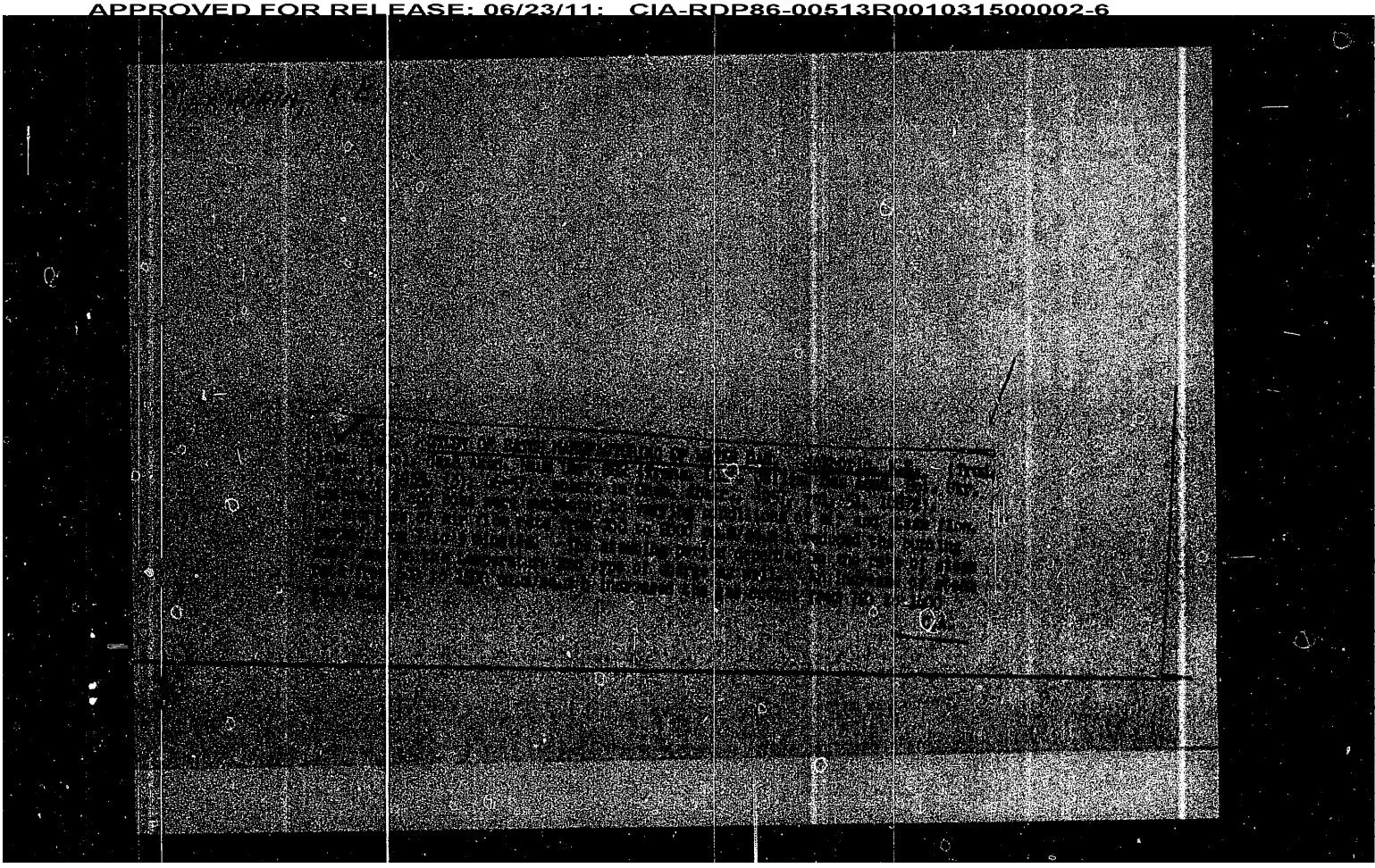
Preparation of active anthracite suitable for purification of waste water of the aniline dye industry. Ukr. khim. zhur. 23 no.1:117-121 '57. (MLRA 10:6)

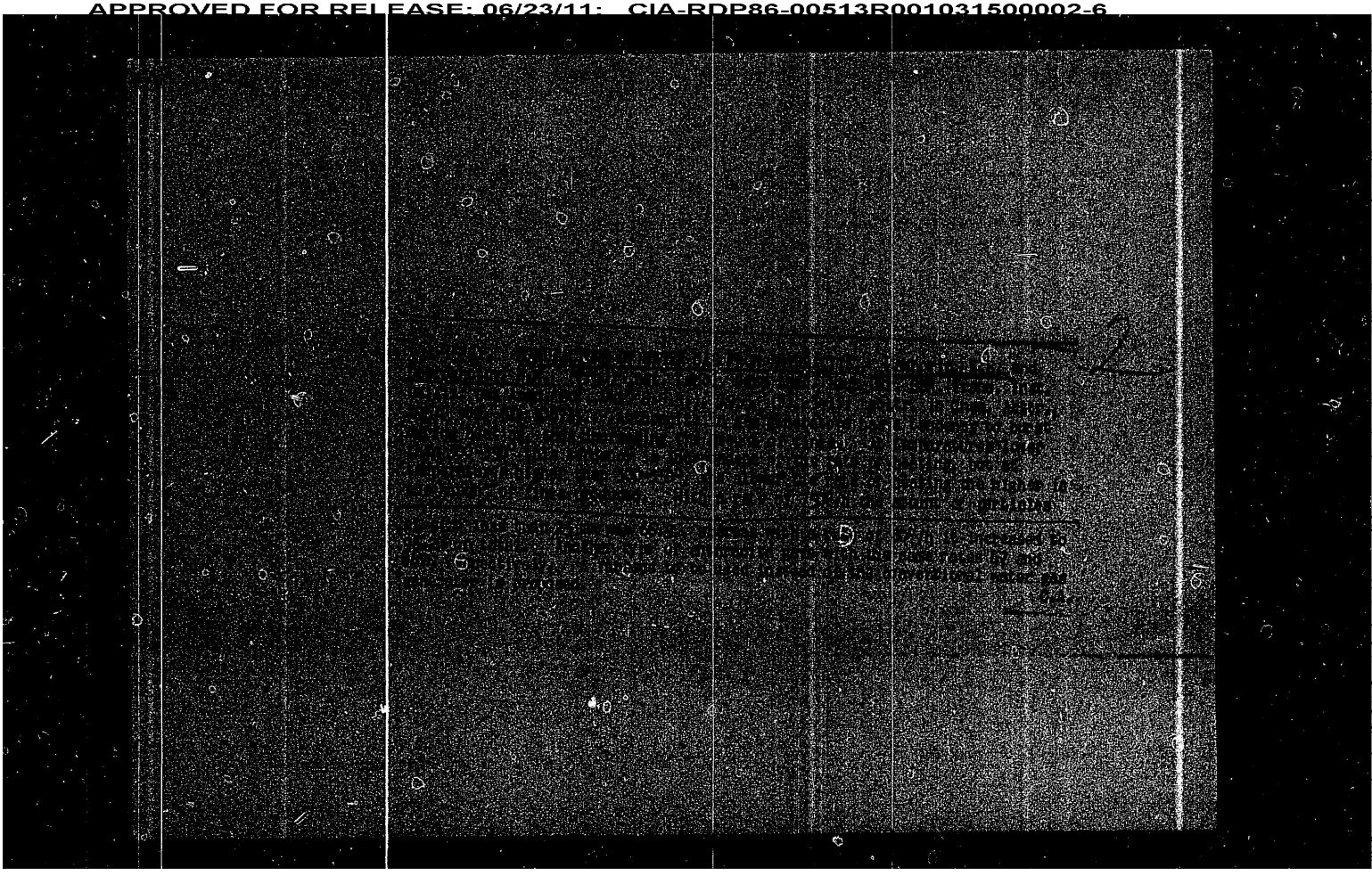
1. Institut obshchey i neorganicheskoy khimii Akademii nauk USSR, Institut ispol'zovaniya gaza Akademii nauk USSR.
(Anthracite coal) (Water--Purification)



Makhorin, K.E.

The influence of the length of a cycle on the capacity of water-gas generator. K. E. Makhorin. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk*, 1955, No. 8, 128-33.—A calcn. method is proposed for the optimum cycle length, based on 2 assumptions: (1) the cycle consists of two principal phases (air and steam), and the optimum duration of the two phases can be calcd.; and (2) when shortening the time of the two phases, the max. temp. of the fuel at the end of the air phase and the character of reduction intensity and the water-gas formation during the steam phase remain unaltered, and only the av. temp. per cycle is changed. A shortening of the cycle to an optimum value permits rising the capacity of modern mechanized generators by 20-30%, and improves the gas quality. Short cycles are particularly desirable when operating on fuels contg. easily fusible ash.
W. M. Sternberg





MAKHORIN, K. E.

USSR/Chemistry - Gas production

Card : 1/1 Pub. 104 - 9/12

Authors : Makhorin, K. E.

Title : Regarding the question of the application of a superheated steam-air mixture in gas generators

Periodical : Stek i ker. 11/7, 24 - 26, June 1954

Abstract : The chemical reactions involved in making gas from coal and steam are dealt with. Data are presented of the calorific capacity of gases produced at varying temperatures of an air-steam mixture applied in the process, and figures are given for the steam consumption at each temperature. Tables.

Institution : ..

Submitted : ..

MAKHORIN, K.Ye.

Toward the problem of the use of preheated exhaust mixtures in gas generators. Stek. i ker. 11 no.7:24-26 Jl '54.(MLRA 7:7)
(Gas generators)

MAKHORIN, K.Ye.

Production of cupola furnace thermo-anthracite. Lit.proizv. no.8: 30-31 N '54. (MLRA 8:1)
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